

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended) A data sending device for generating and outputting a sending signal based on biphasemark-encoded sending data, the data sending device comprising:

a biphasemark decoding section for biphasemark-decoding the sending data; and

a sending section for generating and outputting the sending signal based on output data from the biphasemark decoding section;

wherein:

the sending section includes a mapping section for mapping each symbol of the output data from the biphasemark decoding section to any one of a plurality of signal levels, and generates the sending signal based on output data from the mapping section;

the sending data includes a data section to which biphasemark encoding is applied, and a non-data section to which the biphasemark encoding is not applied;

the biphasemark decoding section detects the non-data section; and

when the biphasemark decoding section detects the non-data section, the mapping section maps the non-data section using a mapping table which is different from a mapping table used for the data section.

Claim 2 (Canceled)

Claim 3 (Currently Amended) A data sending device according to claim-2 1, wherein the mapping section performs mapping such that a higher/lower relationship of the signal level of each symbol with respect to a reference level is constantly inverted on a symbol by symbol basis.

Claim 4 (Canceled)

Claim 5 (Original) A vehicle-mounted apparatus, having a biphasemark encoding function and includes a data sending device according to claim 1.

Claim 6 (Currently Amended) A data receiving device for generating and outputting receiving data based on a receiving signal, the data receiving device comprising:

a receiving section for receiving the receiving signal; and
a biphas encoding section for generating the receiving data by biphas-mark-encoding
output data from the receiving section and outputting the receiving data;

wherein:

the receiving signal includes a data section and a non-data section;

the receiving section detects the non-data section; and

when the receiving section detects the non-data section, the biphas encoding section
converts the non-data section into a predetermined bit stream using a conversion table.

Claim 7 (Original) A data receiving device according to claim 6, wherein the receiving
section includes a determination section for outputting data in accordance with a signal level of
each symbol of the receiving signal.

Claim 8 (Canceled)

Claim 9 (Original) A data receiving device according to claim 6, wherein the receiving
section generates the output data based on a clock signal recovered from the receiving signal.

Claim 10 (Original) A vehicle-mounted apparatus, having a biphas mark decoding function
and includes a data receiving device according to claim 6.

Claim 11 (Currently Amended) A data transmission method for transmitting sending data
including a data section to which biphas mark encoding is applied and a non-data section to
which the biphas mark encoding is not applied, the data transmission method comprising the
steps of:
biphas-mark-decoding the data section of the sending data and mapping each symbol of
a result of the biphas mark encoding to any one of a plurality of signal levels;
detecting the non-data section from the sending data and mapping the detected non-data
section using a mapping table which is different from a mapping table used for the data section;
generating a sending signal based on a result of the mapping of the data section and the
non-data section;

transmitting the generated sending signal;
receiving the transmitted sending signal as a receiving signal;
biphase-mark-encoding a part of the receiving signal corresponding to the data section;
and
detecting a part of the receiving signal corresponding to the non-data section, and
converting the detected part into a predetermined bit stream using a conversion table.
~~A data transmission method for transmitting biphase-mark-encoded sending data, wherein:~~
~~—— the sending data is biphase-mark-decoded and then sent on a sending side; and~~
~~—— the sending data is reproduced by biphase-mark-encoding receiving data on a receiving side.~~

Claim 12 (New) A data sending and receiving device comprising a data sending section for generating and outputting a sending signal based on biphase-mark-encoded sending data, and a data receiving section for generating and outputting receiving data based on a receiving signal; wherein:

the data sending section comprises:
a biphase decoding section for biphase-mark-decoding the sending data; and
a sending section for generating and outputting the sending signal based on output data from the biphase decoding section;

wherein:
the sending section includes a mapping section for mapping each symbol of the output data from the biphase decoding section to any one of a plurality of signal levels, and generates the sending signal based on output data from the mapping section;

the sending data includes a data section to which biphase mark encoding is applied, and a non-data section to which the biphase mark encoding is not applied;

the biphase decoding section detects the non-data section; and
when the biphase decoding section detects the non-data section, the mapping section maps the non-data section using a mapping table which is different from a mapping table used for the data section; and

the data receiving section comprises:
a receiving section for receiving the receiving signal; and

a biphas encoding section for generating the receiving data by biphas-mark-encoding output data from the receiving section and outputting the receiving data;

wherein:

the receiving signal includes a data section and a non-data section;

the receiving section detects the non-data section; and

when the receiving section detects the non-data section, the biphas encoding section converts the non-data section into a predetermined bit stream using a conversion table.